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EDITORIAL NOTES

C.V. IN HORIZONTALS

OUR columns of late have necessarily contained a good deal on the subject of calorific value in relation to wartime conditions, coal supply and quality, and the great need for the most efficient use and treatment of coal—*i.e.*, its conservation. We discussed the matter a fortnight ago, mentioning the fact that redeclarations of calorific value have been in a downward direction, in some cases the drops being of the order of 50 B.Th.U. The trend is readily understandable; as we have pointed out, it operates to offset benzole extraction, to cope with the poor quality and inadequate quantity of coal now obtainable, and to satisfy the requirement of conserving oil for water gas plant. With appropriate plant the change is not difficult technically, though we have emphasized that when calorific value is reduced by blue water gas, coal tonnage is reduced, but coke production is reduced by the same amount. As we have said, if the Mines Department cannot give the Gas Industry sufficient coal, the deficiency will at once be translated to the general fuel field, and in like amount.

So far our comments have been based on the availability of appropriate plant—steaming in vertical retorts, continuous or intermittent, separate water gas plant, or controlled addition of producer gas. But we would like now for a moment to direct particular attention to the declaration of low calorific values by gas undertakings whose sole type of carbonizing plant is horizontal retorts—and there are many such undertakings. A general lowering of calorific value has taken place within recent years, but—and this is our point—there are many works equipped with plant designed to produce, under proper gas-making conditions, a richer gas than the declared calorific value. The lower calorific value can only be made by the addition of inerts as diluents. This practice—it was referred to at the last Institution meeting—must be accompanied by low thermal efficiency, often leads to working difficulties, and is bad from a national standpoint. There are undertakings having only horizontal retorts with declared calorific values of 420 or 450 B.Th.U. per cu.ft. How do they make such a gas, and what is the outcome from the coal conservation point of view? The question is a very serious one.

We think we are right in saying that under controlled conditions—in a phrase, with adequate retort house control, regarding which we have rightly heard much recently—horizontal retorts cannot properly make gas, from any type of coal, of a calorific value below 500 B.Th.U.—*i.e.*, coal gas as supplied to the district and allowing for the addition of air for purification. Yet we have undertakings sending out gas of 420 B.Th.U. or thereabouts. This gas must be the result of overpulling on the retorts, with all its subsequent and widely acknowledged disadvantages. It may be argued that such overpulling merely draws in as diluents the products of combustion from the heating flues, but it is a theoretical argument and at best not a good one, for products of combustion are dead-weight inerts. In practice, however, such overpulling draws in air from outside the retorts, through the mouthpieces and so on, and this air consumes within the retort part of the coal gas being produced. The result is inevitably a lower gaseous thermal yield per ton of coal carbonized. If this aspect was thoroughly investigated, the results disclosed would, we think, cause surprise and should cause consternation. At the present time the matter is of great national importance. We have no right to carbonize coal inefficiently in order to comply with a set calorific value. We say this having at the back of our mind the practical difficulties of the smaller gas-works. In the instances with which this comment is concerned, would national interest be better served by redeclaration of calorific value at a higher standard?

CARBONIZATION OF DURHAM COALS

ONE of the problems which the war has brought to the Gas Industry is how to meet an increased demand for gas while carbonizing coals very different from those used before the war and at first blush perhaps unsuited to particular types of plant employed. For instance, unscreened Durham coals now have to be used where formerly washed gas coals from Yorkshire and Lancashire were available in ample quantity, but are now difficult to get. The carbonization of these Durham coals in continuous vertical retorts has occasioned a certain amount of heart-burning, and has necessitated modification of operating conditions. Like many another matter, however, in the long run it boils down to "knowing how," and much experience has been gained. Preston's experience with Durham coals in continuous verticals was recounted recently in a Paper by Mr. Greenwood (we published an abstract in the "JOURNAL" of Aug. 26) which led to a practical discussion, a report of which we give to-day. There are difficulties, but we should prefer to designate them changes which can be met; as a matter of fact, Mr. Greenwood concluded his Paper by saying that, in spite of the changes, the results as a whole are now satisfactory as far as his Undertaking is concerned.

There is really no need for trepidation if only we "know how." It has been well established that a wide range of Durham run-of-mine coals can be successfully carbonized in continuous vertical retorts, though they are not interchangeable with Yorkshire and Midland coals without modification in retorting practice. We do not intend to give a lecture on the subject, but it might perhaps be useful if we pointed to one or two of the differences and to the effect they have on carbonizing operation and results. If, for example, a gas undertaking accustomed to carbonize Yorkshire nuts—we are talking about continuous vertical plant—changed to Durham run-of-mine coal, it would have to expect a reduction in the number of therms per day consequent on the need for working lower throughputs, an increase in retort house labour per therm of gas made, difficulty in reducing the calorific value of the gas by steaming, and a denser, less reactive type of coke. But the position is really not at all bad and should give no cause for agitation.

There are, of course, points to watch. Ease of travel of the coal through the retorts is largely dependent on the regularity of rodding; irregular attention leads to uneven travel, which in time upsets the temperature conditions in the retort. Rods of greater length than the normal 6-ft. rod are recommended. If the coals supplied are not entirely Durham, it is preferable to segregate the Durham coals into a specific section of the carbonizing plant, since if it is mixed in varying proportions with other types of coal irregular travel is almost certain to result. The rate of heating is important. With some types of retort, upward heating gives the gradual heating desirable for easy travel of Durham coals. As to calorific value, it is usual to limit the calorific value of the gas from Durham coals to a minimum of 475 B.Th.U. per cu.ft. Retort temperature conditions naturally affect steam decomposition, but excessive temperatures should be avoided in view of the possibility of damaging the retort brickwork. In regard to the coke, control of water content and grading can do

much to minimize criticism. Further factors could be enumerated; the point is that, "knowing how," there is nothing to fear from the use of Durham coals in continuous vertical retorts. Nor is acquisition of the knowledge difficult; there is a great deal of experience behind their successful use.

REGIONAL DISCUSSION

DURING the past six months the Wales and Monmouthshire Association has had several excellent discussions on current and future problems and has, we think, developed and agreed upon a number of ideas having as their basis regional working. The formulation of plans to meet possible post-war conditions has been a predominant theme; and though there are critics of post-war planning who maintain that the present is inopportune to ponder the questions involved, we think the majority opinion in the area covered by the Association is that stimulus will be given to those now serving their country to know that the country, in turn, is considering their future. The last meeting of the Association was held on Sept. 10, when Mr. J. Powdrill gave a Paper (see p. 466) entitled "Wartime Miscellany"—a title which really covered thoughts concerning preparedness for the future. The discussion to which it gave rise—we intend to give a report of it next week—was a useful one covering the marketing of appliances with uniform terms and prices, the desirability of some measure of standardization of appliances, in regard to which Mr. Powdrill posed the pertinent query whether gas undertakings have done nearly as much towards this as the manufacturers themselves, and the need for gas tariffs in consonance with the cost of raw coal.

The tariff question is, of course, fundamental. Mr. Powdrill thinks, and with good reason, that gas will be more expensive generally throughout the country in the future than in the past—that is, with the present organization of the Industry and without any form of subsidy. It is a fact, and it is significant, that in the years prior to the war capital costs were increasing at a greater proportional rate than gas sales. Since the war there have been all sorts of expenditure the reverse of remunerative and the position is artificial; but unless there are financial changes of a revolutionary order we can hardly hope to produce gas cheaply. Hence efforts should now be directed to future means of carrying the burden of a higher commodity rate for gas while extending sales, and these ways and means must include tariffs other than the flat rate. For our part, we believe that the Gas Industry has a strong case for a minimum charge on the grounds of the greatest good for the greatest number; in any case it has always before it the adoption of optional tariffs.

Consideration of the greatest good for the greatest number makes us underline a thought concerning prepayment consumers which was brought out by more than one speaker at the meeting of the Wales Association. The point is this: Is the custom of charging a flat rate over and above the price to the ordinary consumer, regardless of consumption, onerous and unfair? What, in fact, is the minimum additional charge which the prepayment consumer ought in equity to bear, and cannot we arrive at regional decisions on the matter? We wonder how many gas undertakings have actually ascertained the return necessary, over and above the price to ordinary meter consumers, to cover the cost of prepayment meter, collection of cash, and the provision of "free" installations and maintenance, and then inaugurated a system of charge whereby the prepayment consumer pays for this service in an initial scale and for gas consumed above the datum line at rates identical with those offered to the ordinary consumer.

THE JUNIOR ASSOCIATIONS

ON one or two occasions recently we have discussed the suggestion, put forward as long ago as 1937, that the Junior Gas Associations should cease to incorporate the term "Junior" in the titles of their organizations on the grounds that it was misleading in that so many senior members of the Gas Industry, senior in regard to position and responsibility, were members of these Associations, and that it was a faulty description in relation to the field covered by them—a varied technical field of increasingly high standard. Amid thoughts of Industry reorganization the idea has been mooted that there could well be one Institution with its appropriate district branches on the lines followed by the Institutions of Civil, Mechanical, and Electrical Engineers. We ourselves have felt that a unified technical gas organization on these lines would foster co-operation between the experienced engineer and the young entrants into the Industry, and would help in attracting to the Industry the type of man of which it so obviously stands in need. This question of getting rid of the word "Junior" came up for consideration this month at a meeting in Manchester of the Joint Council of the British Junior Gas Associations, and a unanimous decision was reached that the title "Junior Gas Association" should stand, the feeling being that "Junior" applied only to the Associations in relation to the "senior" Associations. At the same time it was agreed that the term "Juniors" was loosely applied and open to misinterpretation and misconstruction, and the hope was expressed that members of the Associations concerned would not in future be described as juniors, let alone as "juveniles," as had sometimes happened, since many of them were either in position or age "seniors." The Council has asked us to make this point quite clear.

It was our regard for the excellent work carried out by the Junior Associations, to which we have consistently devoted so much space in the "JOURNAL" since the inception of the first Association towards the close of the last century, that led us to the opinion that "Junior" was hardly an appropriate description at the present day. Conditions have altered in the Gas Industry since the end of the last century, and especially since the last War there has been a gradual change in the qualifications of its personnel. This change has, in fact, been reflected in the technical contributions presented at meetings of the Junior Associations and in the general standard of the discussions. We have never thought of "Junior" as a derogatory expression and we appreciate its use *vis-à-vis* the senior bodies. Usage has made us think of and refer to members of the Junior Associations as "Juniors," and we can hardly believe that this term "Juniors," which is a natural abbreviation, will fail to be employed. As a matter of fact, accompanying the Council's letter requesting our co-operation was a brief report of the meeting, which we publish to-day, and in which the word "Juniors," no doubt unwittingly, "crept in" several times in a single short paragraph. We would emphasize the Council's point, however, that "Juniors" does not necessarily mean "juniors."

WHO GOES THERE?

THE duties of the gas manager or his assistant are many and varied. Sometimes they can be dealt with single-handed; on occasion it is necessary to resort to the assistance of others to solve problems. A piquant situation which arose this month in the gas-works of a small township in Yorkshire called for and met with outside aid. In recounting the story, we are not starting a What would you do? series or even attempting to point a moral or to draw invidious comparisons between company and municipally owned undertakings, though there is a legal point involved. The gas-works in question falls into the municipal class.

It happened that a councillor of the township was taking a stroll in the vicinity of the works when his train of contemplative thought on doubtless some important matter was interrupted by a peculiar noise—to him a most unusual sound—which appeared to emanate from the gas-works. Prompted by his sense of public duty and maybe influenced by curiosity, he decided without hesitation that he must ascertain the cause of this strange noise, and he marched boldly into the works with an air of authority and determination, though perhaps he became a little bewildered as he walked around the various items of plant.

This notion of strangers within our gates did not, however, appeal overmuch to the assistant manager, who, coming from

behind the condensing and washing plant, encountered the councillor and queried his mission. We cannot, much as we should like to, record the exact conversation which ensued, but there arose a time when the assistant manager felt compelled to request the visitor to depart whence he came. The councillor, however, convinced that a noisy noise annoys, was determined to stand his ground, that ground being the gas-works. Whereupon the assistant manager considered it expedient to call in the arm of the law. Again we regret that we cannot recount the conversation between the local constable and the councillor, but the councillor did "go quietly," and we hope he was not subjected to comments from any rude little boys who may have gathered at the gas-works gates.

The sequel was the lodging of a complaint by the councillor, whose sense of propriety and dignity had been sorely offended, in the Council Chamber, when he contended that in regard to the gas-works he held the same rights as a company director. The Clerk, however, stated that legally a councillor had no more right to visit public works than an ordinary citizen—that even a councillor must have due authorization. It was not to be expected that the Clerk would explain the origin of the noise, which remains wropt in mystery.

Coal Production Shortage

The Times Labour Correspondent, writing in the issue of Sept. 17, said that the full gravity of the fuel problem is not yet realized. Production, he continued, is falling short of requirements by 250,000 tons a week, or 13,000,000 tons a year—the estimate of requirements including the quantities of coal that must be stored in summer by gas and other public utility undertakings. But all stocking of coal, together with current consumption, does not equal the winter requirement, and, with short supplies now, "the winter prospect is bleak." He went on to add that there can be no assurance of an adequate supply of power and heat and light in the coming winter unless production is greatly increased and the normal rate of consumption much decreased. "Strict factory economy and domestic economy to the point of self-denial will in any case be necessary, and if production is not substantially increased the economy that will be enforced may even entail hardship. The Government have not yet decided to apply a compulsory rationing scheme to domestic consumers, but circumstances are driving them in that direction, and a decision cannot be long delayed." He concluded by remarking in regard to coal production that there are persistent complaints of voluntary absenteeism which is putting a serious brake on production.

Personal

Mr. J. P. McCRAE, Chief Engineer of the Derby Gas Light and Coke Company, has tendered his resignation, which has been accepted by the Directors. Mr. McCrae went to Derby in 1916 as Assistant Engineer to the Company, and he succeeded the late Sir John Ferguson Bell as Chief Engineer in 1932. He started in the Gas Industry as pupil at Dundee, where his father and grandfather successively were Engineer and Manager. Before his appointment to Derby he was Assistant at Hexham and Doncaster, with a period between in charge of the gas-works of the Great Northern Railway.

Mr. C. N. SMITH, after 21 years' service at Derby, has also tendered his resignation. He had held the position of Works Manager at the Litchurch Works for the past five years.

Letter to the Editor

Structure and Finance of the Two-Part Tariff

DEAR SIR,—I have read with great interest Mr. Pollock's Paper on the above and he enunciates several very sound principles, and is to be congratulated on the thoroughness with which he has analyzed the consumption at Edinburgh and so built up a workable scale for a proposed tariff.

At the same time, he has been caught between two minds on the question of service charge. He adopts the National Gas Council segregation for the calculation of a two-part tariff and then proceeds by adjustment to introduce the demand charge. I am not questioning this method but, to be logical, he should have introduced a little more of the demand element before starting his basic calculations.

His examination of the various cross-sections of consumers makes it clear that no method of analysis can produce a fair tariff.

He adopts three methods of arriving at an average consumption and then finds it necessary even to "trim" the one he finally adopts.

Taking the three-roomed house, there are enormous disparities, the smallest being under 1,000 cu.ft. per annum, and the largest about 130,000 cu.ft. per annum. At the ends of the scale, in Appendix 7, the effect of variation is clearly marked.

In the one-roomed house the difference between the "mean" and the "mode" is 13,000 cu.ft., against 7,000 cu.ft., and in the house of seven rooms and over the "mean" is 47,000 cu.ft., and the "mode" is 24,000 cu.ft.

Looking at the table in Appendix 3 it would appear that he would have been just as near the truth had he adopted the "mean."

The only criticism I have on the final result is the omission to recognize that in arriving at a combined service, plus demand charge, one part of the cost is a fixture—viz., what would be the service charge in a three or four part tariff.

Such items as meter repairs, meter inspection, meter reading, billing, accounting, stationery, and such-like, are 100% a function of the number of consumers, and therefore the service charge of £165,487 in Appendix 1 should have been divided into two sections:

(*a*) The common charge divisible by the number of consumers.
(*b*) The charge depending on the demand.

He would then have avoided the anomaly that the service charge of the seven-roomed house is exactly 3½ times the service charge of a one-roomed house, which is directly in proportion to the average consumption and therefore, to some extent, defeats the object of a two-part tariff built up in this way.

Finally, if it is the intention to embrace demand charge, then the non-domestic service charge should be much more than 50% in excess of the domestic service charge per consumer.

I regret that I have to remain,

"ANONYMOUS."

Sept. 18, 1942.

Wales and Monmouthshire Association

A General Meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers was held at Swansea on Sept. 10.

The President (Mr. J. F. Rust, Newport), welcoming those present, said how glad they were to have with them Major E. I. David (Regional Gas Liaison Officer), and Dr. W. E. Diamond (Assistant Secretary of The Institution of Gas Engineers).

On behalf of the County Borough of Swansea, a hearty welcome to the town was expressed by the Mayor (Alderman T. W. Allison), who emphasized the part which the Industry would be expected to play in the new Britain that would arise out of the present conflict.

Reference was made to the death of Mr. Alfred Harrison, former Editor and Director of the "GAS JOURNAL," who for so many years had made it his custom to be present at the Association's meetings, and whose cheerful presence was missed by all the members.

Condolence in the loss of his father was also expressed with the Hon. Secretary (Mr. E. M. Edwards).

Applications for membership and for associate membership respectively from Messrs. S. D. Coole (Barry) and C. Gibson (Llantrisant) were approved.

The retiring President, in introducing the President-Elect (Mr. A. E. Pask, Monmouth), recorded that not only had Mr. Pask's qualities been recognized by the Association, but that they had also been recognized by members of the Monmouth Chamber of Trade, who had recently elected Mr. Pask as their President.

Presenting Mr. Rust with a silver salver, the new President recounted that Mr. Rust was the first gas engineer to make his acquaintance when he first came into the region about 19 years ago, and it was therefore a fitting honour that his should be the privilege of making the presentation. Mr. Pask mentioned that the Wales and Monmouthshire Association was the first organization formed in the Principality for the collective discussion of all matters connected with the Industry, and he was happy to record that the Association, throughout its life, had so actively participated in the Industry's well-being.

The meeting congratulated Mr. Clifford B. Jones (Neath) in having secured the Higher Grade Certificate in Gas Engineering (Manufacture), which he received at the hands of the President.

The Hon. Secretary, Mr. E. M. Edwards, in submitting the 32nd Annual Report and the Statement of Accounts (which were adopted), referred to the fact that the Association now represented 34 affiliated undertakings. He reported that during the year it had been decided that the duties in connexion with coke matters formerly carried out by the Special Purposes Section of the Association would in future be performed by the newly-formed S. Wales and District Gas Coke Association.

A Paper entitled "Wartime Miscellany" was presented to the meeting by Mr. J. Powdrill, Pontypool, which evoked a lively discussion. An abstract of the Paper is given on p. 466.

At a luncheon which followed the meeting "The Town and Trade of Swansea" (with which was coupled the name of the Mayor) was given by Mr. W. CLARK JACKSON (Neath).

Responding, the MAYOR emphasized the need for realism in tackling the post-war problems, and no less realism in planning. His knowledge of the past activities of the Industry enabled him to express the

firm conviction that the Industry realized this need, and that it would maintain its tradition in the building of the new Britain.

The toast to the Wales and Monmouthshire Association of Gas Engineers and Managers was proposed by Major E. I. David (Regional Gas Liaison Officer), who expressed pleasure with the manner with which he, as an "outsider," had been received by the engineers and managers in the performance of his duties, whom he congratulated in their achievements, particularly since the outbreak of war, knowing that their tasks had been accomplished with severely curtailed personnel and under most trying conditions.

Ministry of Fuel and Power

Gas Directorate Appointments

Mr. W. J. Shelley has been appointed as the Assistant Regional Liaison Officer to the Gas Directorate attached to Mr. A. Fisher.

Mr. W. L. Lithgow has been appointed as the Assistant Regional Liaison Officer to the Gas Directorate attached to Mr. C. W. Jamieson.

Institute of Fuel

The opening meeting of the Session will be held on Oct. 13 at 2.30 p.m. in the Lecture Theatre of the Institution of Electrical Engineers, Savoy Place, W.C. 2, when the President, Mr. W. M. Selvey, will present a short Address. This will be followed by the presentation of the Melchett Medal for 1942 to Dr. Arno Carl Fieldner, Chief, Fuels and Explosives Services, U.S. Bureau of Mines. As Dr. Fieldner cannot be present, the Medal will be accepted on his behalf by the United States Embassy. The Melchett Lecture, entitled, "The Analysis and Testing of Coal in Relation to its Properties and Utilization," will, in Dr. Fieldner's absence, be delivered in the form of a talking film of himself reading it, which will be reproduced in the Lecture Theatre. Any Members of other Institutions are cordially invited to be present. No tickets will be required for admission.

Preceding the meeting, an informal luncheon will be held in the Waldorf Hotel, Aldwych, W.C. 2, at 12.30 for 1 o'clock, to which members may bring their friends. The price of this luncheon will be 10s. 6d. each, exclusive of drinks. Applications for tickets, which must be accompanied by remittance, must reach the Secretary, Institute of Fuel, 30, Bramham Gardens, S.W. 5, not later than Oct. 9.

A Joint Meeting of the Institution of Electrical Engineers and the Institution of Mechanical Engineers will be held in the Lecture Theatre of the I.E.E. at 5.30 p.m. on Nov. 5, to which members of the Institute of Fuel have been cordially invited, when a Paper will be given by Mr. J. N. Waite, of the Central Electricity Board, entitled "Coal for Steam Raising." Advance copies of the Paper will be available on application to the Secretary of the Institute of Fuel, about ten days before the meeting.

The Coals of South Wales

The chief aim of the series of Fuel Research Coal Survey Papers is to place before the public the latest information concerning the coal resources of the country as soon as it becomes available. The latest in this series is No. 55, dealing with the coals of South Wales.*

The South Wales coalfield contains a very wide variety of types of coal, ranging from high volatile bituminous coal to low volatile anthracite, and this variation takes place in a very orderly way from one side of the field to the other. This regularity is used to advantage in the present paper, which deals with the field as a whole, rather than with any particular seam.

A representative and widely recognizable seam—the Nine Feet—was taken and followed across the field. At the same time samples were taken of many of the other seams and of commercial grades of marketed coal.

The report emphasizes the interdependence of the many physical and chemical characters of the coal and shows how this may be used to assess the type of coal to be expected, when either the source of origin or some single character, such as volatile matter content, is known.

Though the report must be considered as of an interim nature, to be followed by more exhaustive accounts of the various seams and commercial grades, it can be regarded as being a considerable contribution to the knowledge of this important coalfield.

A brief geological description of the coalfield is given. This is followed by a statement of the extent and scope of the survey, and notes on the method of sampling and analysis. The physical and chemical properties of the South Wales coals and their interdependence are then discussed. This leads to the main substance of the report, which is concerned with the variations in the coal across the field, and the kinds of coal obtainable. The whole is illustrated by maps, diagrams, and sections of the coal measures, and an important section deals with the preparation of the coal for the market.

* Fuel Research Survey Paper No. 55: "The Coals of South Wales"; published by H.M. Stationery Office, price 1s. net.

"The Hub of the House"

From the Association for Planning and Regional Reconstruction (32, Gordon Square, W.C. 1) we have received a copy of "The Hub of the House—Part I, The Kitchen," which is a report on work showing alternative arrangements of standard size fittings and equipment in floor areas of different size and shape, planned exclusively for the provision of meals. The investigation has studied the relationship of one process with another and emphasizes importance of the balanced placing of the three principal units—the cooker, sink, and work-table—in the layout. It has been limited to planning for two sizes, which are illustrated with drawings, the small kitchen for 2–3 people and the medium for 3–5 people. The report has been prepared at the request of the Ministry of Health Central Housing Advisory Committee Sub-Committee on the Design of Dwellings, and forms the first part of the Association's research into designs for the "Hub of the House." It will be followed by similar work on the heating of the house.

Fires in Bunkers

In a letter published in *Fire*, Mr. C. T. Cobb, Chief Officer of the Bedford District Gas Company's Fire Brigade, observed: I have had enquiries from several places asking me how I deal with fires in coal bunkers, situated over vertical retorts, without damaging the settings with water. The retort house, usually about 90 ft. high, is the first subject for consideration. I have erected a 2½ in. "dry riser," which is straight to the top of the retort house. At the base the riser has a 2½ in. instantaneous coupling for hose, which can be charged by pump or hydrant pressure.

At the crown there is a Y piece. One branch of this has an instantaneous coupling for hose, the other has a reduction piece down to 1½ in. This runs the full length of the retort house, both having separate controls. Over each bunker from the 1½ in. pipe there is permanently fixed 30 ft. of hose with stirrup pump nozzle attached. Each of these has its own control. The fire, which is usually under about 10 ft. of coal, will take so much water that it is almost certain that the water will get past the slide and damage the settings, which are very expensive. Very little smoke or fire is present, yet it must be checked, so here is the method:

Two men are lowered into the bunker with shovels. It becomes a damping down and turning over job until the seat of the fire is reached, using the stirrup pump nozzles, then bringing the fire hose into use with a branch and ½ in. nozzle attached. In this way we knock the fire out.

By this means no water gets through. Particular care must be taken in the damping down to ascertain that the coal is quite cool.

The Dundee Office of Messrs. George Wilson Gas Meters, Ltd., is now located at 53, Taylor's Lane, Perth Road, Dundee; telephone, Dundee Park 68576.

A Meeting of the Executive Committee of the Gas Companies' Protection Association will be held at 5, Victoria Street, S.W. 1, on Sept. 25 at 2.30 p.m.

The South-Western Gas and Water Corporation, Ltd., is paying on Oct. 9 an interim dividend on the Ordinary Shares of 2% (actual), less income-tax, in respect of the year ending Dec. 31, 1942.

The North Cheshire and District Gas Company co-operated recently in an effort of the local authority to promote "Stay at Home" holidays in Hyde. Under the direction of the Chairman of the Parks Committee a successful Horticultural Show was organized in the Public Hall, and many hundreds of local residents attended. An attractive stand was arranged by the Gas Company incorporating special displays of bottled fruit and vegetables. Demonstrations were held four times a day, and a large crowd of interested housewives attended each session.

Industrial Bulletin No. 2, prepared by the Ministry of Home Security, has been published by the Stationery Office. These Bulletins, which contain information obtained under raid conditions, are intended to assist industry and commerce to keep their air raid precautions schemes up-to-date in civil defence technique. They are for sale on a restricted basis. Copies can be obtained, price 9d. each, on written application to H.M. Stationery Office, York House, Kingsway, London, W.C., by Clerks to local authorities or county councils or the principals of public utility companies or industrial or commercial concerns or of institutions, or by County Secretaries of the St. John Ambulance Brigade, the British Red Cross Society, and St. Andrew's Ambulance Association.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

MIDLAND ASSOCIATION DISCUSSION

As reported in the "JOURNAL" last week, a meeting of the Midland Association of Gas Engineers and Managers was held in Birmingham on Sept. 10, when Mr. **E. V. Evans,** O.B.E., President of The Institution of Gas Engineers and Chairman of the Council of the Gas Research Board, gave an informal Address in the course of which he dealt with the work of the Board, the function of the chemist in our Industry, and some of the problems of post-war planning. The Address was published in last week's "JOURNAL," and an outline of the discussion follows.

Mr. **F. C. Briggs** (Dudley), referring to the "average" cost of gas supply, remarked that those consumers below "average" who needed little gas ought to pay more per therm than the "above-average" consumer, and to bring into effect reduced gas prices the Gas Industry's aim should be to induce all consumers to utilize gas more extensively. This question of the more general adoption of refined heat service brought him to ask to what extent their erstwhile opponent, electricity, was thinking on national lines. Had electricity progressed as far as the Gas Industry in this way? Obviously both gas and electricity were important national assets, and to his mind the problem was one of deciding what special spheres of application were best suited to each form of energy. They had to agree upon a desirable distribution of the heating and domestic loads between gas and electricity, and in his opinion it was folly to imagine that the application of electricity could be confined to what he would term "gadget" use. Turning to the question of the chemist *vis-à-vis* the engineer, he would suggest that the managing director, the man who "ran the show" and was responsible for finance, should be as it were the head man among equals, possessed of shrewd common sense and capable of evaluating the work of the chemist and the engineer. He must be prepared to give scope to the specialists in their respective branches, working on the principle of getting the best from a common pool of information to which each was encouraged to contribute his full quota.

Mr. **G. M. Gill** (Severn Valley) said that chemists should be regarded as the eyes and ears of the engineer and manager. Gas-making was essentially a chemical process; a gas-works could not be run efficiently without a chemist. Regarding the future, the dictum "Sulphur must go" was fundamental, and it was equally certain that working in small units was inimical to progress. He was in complete agreement with Mr. Evans's sentiments concerning attractive gas tariffs.

Mr. **G. C. Pearson** (Birmingham) outlined the experience of the Birmingham Gas Department in its long established policy of employing chemists and of applying their work. He referred to the work of Dr. H. G. Colman at Saltley and Nechells, of Dr. W. B. Davidson, of Dr. E. W. Smith, now Director-General of Gas Supply, and of the present Chief Chemist, Mr. T. F. E. Rhead. Continuous chemical control was now normal procedure, and it was undoubtedly largely responsible for efficient working. Mr. Pearson spoke of the setting-up of coal test works as long ago as 1906, the operation of which had guided the Department's progress. Turning to the present and the future, he appreciated the need for a type of gas-making plant which was able to make or not to make coke at will. In Birmingham extensions of plant were in the one direction—continuous vertical retorts, than which he knew of no cheaper gasmaking plant. But it would be most desirable to have available a type of plant independent of the production of coke. Thoughts on the subject were bound up with consideration of the meeting of peak loads during the winter months, for which purpose, with gas-making plant as they knew it to-day, a large amount of spare plant had to be carried.

Mr. **T. F. E. Rhead** (Birmingham) thought it important and useful to know that Mr. Evans considered the present types of gas-making plant as being suitable to deal with requirements of the future—useful from the financial point of view when one considered the millions of pounds invested in such plant. The new type of self-contained plant had to win its spurs. Yet present forms of plant were really crude, and if an enclosed plant on the lines mentioned by Mr. Evans could be brought within the realm of practical politics, so much the better. Reference had been made to caking and non-caking coals. Actually only 30% of the coals available were of the caking variety, and it was desirable to adopt methods by which non-caking coals could be employed. Mr. Rhead then spoke of the small percentage of undertakings which in fact had any chemical control. For example, out of 80 undertakings in the Midlands, 24 employed what he would term good retort-house chemists, 12 had group chemical aid, the remainder had no chemical control at all. As an Industry they were short of control chemists of good type, and there was no doubt that chemical control on a regional basis was needed. He thought that they in the Midlands might well start organizing for this right away; and he suggested that if a qualified chemist could visit a small works for as little as, say, half a day a week, the engineer and manager of that works would gain invaluable information. The move could be started without delay and to great advantage.

The **President** (Mr. C. F. W. Rendle) heartily endorsed this suggestion, which he regarded as well worthy of being applied immediately. The Mutual Aid Panel had had convincing proof of the value of such a plan, and, if needs be, the Panel could carry out the arrangements for the purpose. It was up to those interested to make their wishes in this direction known.

Mr. **R. J. Rogers** (Parkinson Stove Company) remarked that the appliance manufacturers were keen to see translated into fact the "Sulphur must go" slogan, and he said he realized, as one who had been engaged on the supply side of the Gas Industry, the great importance of the chemist. He valued greatly his membership of the Gas Research Board and of the Post-War Planning Committee. This Committee, he would say, was doing much spadework and was making satisfactory progress, though it was neither desirable nor politic to detail the work being carried out. Detailed reports would be likely only to give a distorted picture of the work as a whole.

The **President** observed that emphasis had so far lain on the domestic load. In London the industrial load was a comparatively small proportion of the total; in Birmingham, however, the position was vastly different.

Dr. **C. M. Walter** (Birmingham) expressed the view that, though the present situation of the industrial load was necessarily due to war demands, those industrialists who had had experience of gas service on tap would not wish, post-war, to revert to other fuels.

Mr. **A. W. Smith** (Birmingham), having referred to the all-round contribution of Mr. Evans to the Industry's progress, mentioned how at Birmingham they had passed through various phases of "chemical help" until they had now built up a happy spirit of co-operation, in which any atmosphere of suspicion had no place. As instance, weekly meetings of engineers and chief chemist were held at which common problems were discussed, and each participant, engineer or chemist, was made to feel that he was truly taking part in the effective management of the Gas Undertaking.

Mr. **A. B. Britton** (Hinckley) supposed that, whatever the results from research on the new form of carbonization in self-contained closed vessels, change to the erection of such units would, from financial considerations, of necessity have to be gradual. He added his support of the idea of undertakings sharing the services of a qualified chemist.

Mr. **L. P. Ingram** (Loughborough) put forward the view that in the future Gas Industry the chemist would be of more importance than the engineer. To-day, most of the purely engineering problems were in fact solved by the contractors of plant, but the operation of these plants had to be carried out by Gas Industry personnel, and the process demanded chemical control. And he pointed to the gulf of difference between the "chemist" and the "tester." "Testers" were not "chemists," and education schemes should be planned in recognition of this.

Mr. **J. Mitchell** (Leicester), having referred to the misguided policy of keeping obsolete plant until it was worn out and beyond efficient and economical service, instead of adopting a policy of vigour and enterprise in scrapping worn-out plant and installing newer and better, spoke of the chemist and the possibility of gas undertakings assisting in his training. Many young chemists lacked the wider, yet essential, knowledge of gas-works operation and practice. Could not undertakings, he asked, get together and institute some system of rota covering the training for, say, one year, of students in works practice in its different aspects?

Mr. **F. C. Briggs** suggested that it should not be the object of the Institution Education Scheme to train chemists as such—and the same reasoning might apply to the training of engineers. Would it be found that the best type of Industry recruits for the higher posts would be university graduates? Was a higher standard of education needed for entrants into the Institution, and a lower standard for those coming into the Industry but not intending to attain membership of the Institution?

Mr. **E. V. Evans,** replying to the discussion, agreed that special spheres of application should be definitely allocated to gas and to electricity, and in his view the wisest plan towards this would be for the Government to appoint a special commission to investigate the problem—a commission consisting of disinterested people who would base their conclusions and recommendations on grounds of national economy. Regarding new processes generally, progress was slow—to some it might appear very slow indeed. Work on the new gas-making process of which he had spoken was started in 1935—a considerable time ago; and he would emphasize once again that they must not wait, in dealing with problems and future likely developments in the extension of the use of gas, on the results of the Gas Research Board in this particular direction. Present known types of plant were available to meet future demands, including peak load demands, and were capable of satisfying them. In regard to the use of non-caking coals, it was, of course, pleasing to contemplate that all types of coal could be processed in the high pressure self-contained vessel envisaged, that in the process non-caking coals were in fact converted into caking coals. Any suggestion of the scrapping of present types of gas-making plant was entirely foreign to the views and conceptions of the Gas Research Board, which regarded its work from the angle of the possibilities of its knitting into the general scheme of gas production in the future. Turning to the place of the chemist in the Industry, he might mention that for many years the policy of the South Metropolitan Gas Company had been to apportion to the chemist the entire responsibility of the control of the coal from its entry to the works to its exit transformed into other products—complete chemical control of the carbonizing process. And this plan engendered no bad feeling

among the engineering staff, who were, indeed, relieved to have the appropriate conditions of treatment controlled for them. The scheme suggested that undertakings might help in giving young chemists wider practical training on the works was an admirable one and would, if brought into operation, prove an immense contribution to efficiency. Industrial gas had been mentioned. He would not enlarge on this aspect, but he would reiterate that, whatever the industrial load, the fact remained that 35–40 million tons of coal were being consumed domestically in the raw state. Finally, he would like to say how much the Gas Research Board valued the help of the Society of British Gas Industries and its representation on the Council.

WARTIME MISCELLANY*

By J. POWDRILL, Pontypool

DURING the last war most gas engineers had their post-war plans largely settled in their minds. First, they clearly saw new fields for the sales of gas and hoped that conditions would return somewhat to pre-1914 standards to allow for this expansion. Secondly, with the greatly improved methods of carbonization that had become available to the Industry, they had something concrete to explore.

Conditions did not return to pre-1914, but generally the purchasing power of the public had materially increased, and the demand for a higher standard of fuel appliances was all in the Gas Industry's favour. At the same time the increased cost of production was to a large extent covered by improvements in coal carbonization processes, and the improved marketing of gas as a labour-saving fuel was greatly developed. How different the position is to-day, and will be for some time after the present war!

The cost of gas production is greatly increasing due to increased cost of wages, coal, and material, and these costs will no doubt remain to a large degree in the post-war years. There is no concrete evidence of new and revolutionary coal-processing methods coming as a ray of light, as was experienced 25 years ago, to offset these increased costs. There have been references made to research into new coal-processing methods, but so far none of them is in the realm of practical application; they will no doubt remain in the realm of plans of the future. Therefore I think it is only reasonable to assume that our main commodity, gas, will be more expensive generally throughout the country in the future than in the past. So important is this point that I think it should materially affect our outlook when preparing any plans regarding future development, and efforts should now be directed to ways and means to carry out to some degree at any rate the unavoidable higher commodity price of the future. It is significant that in the years prior to the war the return on capital invested in our Industry was decreasing. The quantity of gas sold during the ten years prior to the war had increased by only 11%, while the capital involved had increased by 30%. In the case of undertakings controlled by local authorities, the amount of money borrowed by them had increased during the same period by 22%, while the receipts during the same period had decreased by 5%.

I have merely used the foregoing figures as a barometer of the trend during these years, as the money involved in both local authority and company controlled undertakings comes from the same source—namely, the investing public.

This problem has not been solved by the war and may develop into a more serious problem after the war. In my opinion these problems, which have dropped somewhat into obscurity owing to the war, are responsible for the spate of wishful post-war plans now cropping up here and there, none of which seems to have the merit of solving outstanding problems that have required attention for some time.

A certain amount of loose thinking has arisen that by the use of one or another of the following proposals these difficult problems can be squared and that the matter will then automatically resolve itself. The first is that our Industry will be all that we desire it to be by its direction passing into the hands of large financial corporations or, on the other hand, into some form of State control. Others feel that by the Industry developing on the slow process of evolution as in the past, a safe and middle course can be found.

I think you will agree that our Industry has endeavoured to sell the public an excellent refined fuel with the best service possible at the lowest possible price. It is only natural that we should endeavour to give an extended and better service, and I think no criticism of lack of effort to this end can be brought against the Industry as a whole. I know of no public criticism or dissatisfaction ever being raised against the Industry generally, and I think more credit should be given to the Industry for the services it has rendered to the public in the past than is being expressed at the moment. Our Industry is meeting many problems due to the war and it appears to be overcoming them, but in tackling these problems it is developing a tendency to hatch these problems into some source of master plan for fulfilment in post-war years. The while, so many other organizations are post-war planning that it is difficult to keep pace with all of them.

There is talk of forming a new centre of industry, the transference of population, new building programmes, new townships, &c. When these plans have reached the stage where something concrete can be seen, I do not think we need fear the Gas Industry's being unable to play its part. At the same time there are many schemes that can easily be carried out now, having foundations of ample size to allow for full development in post-war years. Some of the following suggestions have been voiced many times and have been talked about for many years, but little has been done to give them life. We shall never have the opportunity as now presents itself for preparing a co-ordinated and comprehensive scheme for sales promotion and advertising in South Wales. I would suggest this Association's post-war planning committee prepare a scheme for the collective marketing of appliances at uniform prices and terms, so that advertising can be resumed in days of peace with that needed extra punch which has been lacking in the past, by stating and advertising uniform prices and terms by which appliances may be obtained throughout the South Wales area. This would be in striking contrast to our present local B.C.G.A. advertisements that have the merit of attracting attention, and then exhorting the reader to come to his local showrooms for terms and prices instead of developing his interest in the ad advertisement, by telling him he can afford it and the payment by which he can obtain it. We have had the experience of consumers having priced an appliance in a neighbouring undertaking's showroom expressing annoyance on returning to their local showrooms and finding the terms materially different.

A specification of the limit of free installation can be easily agreed and incorporated in the price for which appliances shall be sold. A scheme should be fully prepared for when we restart normal installation work.

There has been a great deal of discussion on the necessity for standardization of appliances. This is a problem for the appliance manufacturers, who have given tremendous service to our Industry but have not received the acknowledgment that is due to them for their development work. Have we played our full part as the appliance makers have played theirs? We have our sphere of operations in which to bring about standardization. Again, South Wales is in a favourable position for developing a uniform calorific value without any drastic changes taking place or serious inconvenience to many undertakings.

So that we may be the first Association to make a definite move in this direction, I trust I am not out of order in suggesting a report on this question be prepared by the Council of this Association, and that the result of their deliberation be submitted for members' consideration at the spring meeting to be held in Monmouth.

Our future expansion is to a large extent dependent on the founding of a tariff scale that will have a very wide appeal to the public. This is a problem that should be studied by a number of people responsible for gas administration. From the results of such work, I feel confident that a tariff scale embodying important principles could be formulated to cover certain areas where similar conditions exist.

In my opinion we shall need our full efforts to carry out a successful and vigorous policy in the future, for I see only greater competition than we have yet experienced. To hope that some post-war plan is coming to make the road an easy one in the future is a very dangerous line of thought.

(A report of the Discussion on the Paper will be given next week.)

* From a Paper to the Wales and Monmouthshire Association, Sept. 10.

British Junior Gas Association Joint Council

A meeting of the Joint Council was held in the Gas Department Showrooms, Town Hall, Manchester, on Sept. 9, Mr. H. Platt, M.Inst.Struct.E., of Bolton, presiding.

Following the meeting the members were entertained at lunch by the Council of the Manchester and District Junior Gas Association when Mr. A. L. Holton, late Chief Engineer, Manchester, proposed the toast of the British Junior Joint Council. The proposal to institute a Joint Council was made by the speaker some 40 years ago, and since its inception, remarked Mr. Holton, the movement had progressed far beyond his dreams. He was particularly pleased to know that the Junior Associations had achieved such distinction as to qualify for the Bronze Medal of the Institution. He urged the Juniors to continue in their efforts, as there was much to be done; he felt sure that the Juniors were equal to the task.

Mr. T. H. Reynolds, Stockport, replied on behalf of the Juniors and also made reference to salaries and post-war conditions.

Following lunch the Juniors visited the City Library and the Gas Department Showrooms, where Mr. J. H. Cadman, Commercial Manager, showed some interesting films. Tea was provided at the showrooms, after which the delegates attended the opera as guests of the Manchester Junior Council.

CARBONIZATION OF DURHAM COALS*

Mr. P. **Sumner** (Birkenhead) had found that such mixing as had been described was not good enough and only led to "layering" and subsequent uneven working of retorts, and they had obtained much better results by carbonizing 100% Durham coal in one section of the plant. It was found that there was somewhat irregular travel with the type of mixing mentioned in the Paper, but during the period that the mixture was used somewhat larger retorts were employed. They were 10-ton retorts which were certainly not in very good condition. When they carbonized 100% Durham coal in 6-ton retorts very satisfactory results were achieved. Difficulties had been experienced, but they had been overcome. Rodding had to be attended to more carefully than with other coals. When carbonizing in Woodall-Duckham retorts there was considerable pressure in the jigger hole—*i.e.*, the hole farthest away from the offtakes, while the other offtake hole was under considerable pull. When the top men were given a small bent bar they could reach the top of the deflector and break down the sticky coal, giving a free passage for the gas to the offtake. Difficulty was experienced in the case of the large retorts owing to the bulky coke present on the extractors. Only slight difficulty had been experienced with regard to bulky coke in the case of the smaller retorts.

Mr. **Greenwood** said that Preston had tried 100% Durham coal on a particular section of the plant. They had only very limited facilities for operation, and they had thought that mixing would create greater difficulties. When they began to carbonize all Durham coal, it was found that the differences in the coals were so pronounced that the resultant carbonizing conditions were very variable. Therefore they were driven to mixing the coal in the first instance as an experiment and it succeeded quite well. The breaker pit into which the coals went before they were elevated was of about 50 tons capacity. They tipped 8 or 9 tons, put in 8 or 9 grabs of Durham coal and made a mixture in that way. When the coal got to the bunkers there was a little spreading in one bunker, and it was then worked along to the next, and so on. Generally speaking, he could say that there was now very little trouble due to the differences in the coals owing to the fact that they were mixed.

Mr. **H. N. Dann** (Blackburn) said that Blackburn had had to deal with a considerable quantity of unscreened Durham coal, but that lately their supplies had been less than ½ in. in size. They had been trying to steam down to 425 quality. In an effort to deal with this ½ in. coal in a 33 in. retort, they tried to work all percentages up to as high as 50%. Mixing these ½ in. coals with coals of average size resulted in segregation in the bunkers, and it was found that in working the retort stratification occurred and the results in regard to make and quality were most irregular.

Mr. **D. L. Rumble** (Stockport) said they had come to much the same conclusions as Mr. Greenwood. It was better to carbonize the Durham coal and slow the throughput by about 25%—*i.e.*, to work a 6-ton throughput with 8-ton retorts. There was no difference in regard to the rodding attention necessary. All kinds of mixtures had been tried, starting from 10% Durham and Yorkshire, with a similar experience to that previously described, and particularly segregation in the bunkers. If there was mixing up to, say, 20 or 25% without checking throughput, difficulty was experienced with very irregular coal travel.

An early trouble was with regard to pitch formation in the collecting mains of the offtakes. This appeared to be entirely due to the hanging of the charges and the relatively high top temperatures worked to on the particular bench—namely, 1,150°C. A further trouble was lack of storage room. After scurfing, retorts had to be filled with coke on Saturday ready for going on on Monday morning to cope with the largest demand of the week. When put on after standing 36 or 48 hours, the retorts developed serious hanging troubles. Attempts were therefore made to work gas stocks low enough to ensure that immediately the retorts were filled with cold coke, they were charged and put to work slowly. This overcame the hanging troubles. The reason for these troubles was thought to be that on standing and getting overheated a certain amount of shringage took place and the fines found their way between the coke and retort walls, immediately swelling out and jamming the charge.

Mr. **J. G. Nadin** (Oldham) had experience of working with 103 in. vertical retorts with Durham coal. From the beginning the policy had been to keep the Durham coal by itself, and not to mix anything with it. A certain amount of difficulty was experienced to commence with, as seemed to be the case generally, but this appeared to have been overcome and operation was now successful. In retorts carbonizing Durham coal 100% was used, and for a short period this figure had been used on the whole stack. The greatest trouble had been the reduction of output, which amounted to 20% compared with the Yorkshire coals usually carbonized.

At Oldham after using Durham coal for a few days, they found that difficulty occurred with the tar in the separating tank. It became very thick and would not overflow over the weir, and had to be run off from the bottom of the tank. Another trouble was coke. Customers generally brought a certain size of wagon which usually held the same weight of coke. When Durham coal was carbonized, the weight increased considerably owing to the density, and this resulted in argument and doubts as to the accuracy of the weighbridge.

Mr. **J. Albinson** (Manchester) mentioned deliveries of material called washed gas smalls, which really consisted of dust. This dust was 90% of some of the coals, saturated with much water. The angle of repose was 120° and it would not fall out of the wagon even if the wagon was tipped upside down. The difficulty with such material in the case of vertical retorts was that it was much too closely packed. It would be interesting to learn if the members of the Association had done any experimental work in regard to mixing coke breeze with material of the Durham type in order to lighten the structure and allow it room to expand. In the case of a dust saturated with water, the water practically filled the whole of the free spaces of the coal and, in the initial stages of carbonization, when the plastic stage was being reached, there was no room left to permit of freedom of expansion. There was jamming up in the top of the retort, causing all kinds of difficulties.

Mr. **D. Benson** (Bolton) stated that they had tried Durham coals on two types of Woodall-Duckham plant. The experience was that with an upwardly heated retort there could be 100% working with one section of retorts. With downward heated retorts of the bigger capacity, and where the maximum temperature was at the top, the experience had been definitely variable, and it was advisable to keep the mixture to as low a proportion as possible. Pitching trouble had been experienced, apparently owing to three main causes. The first, that a certain proportion of unskilled labour had to be used for rodding which in normal times would not be employed, and this was one of the prime causes of bad working. Another trouble causing pitching was the high C.V. made by the Durham coal; the carbonizing foreman tended to have an excess of pull on his retorts and reduce the C.V. by that means. This resulted in the collecting main receiving a considerable proportion of the fine dust of the coal, where it mixed with the tar and formed a sort of asphaltic compound in the hydraulic main.

Breeze had been mentioned by Mr. Nadin. Much breeze had been made at Bolton which could not be disposed of, so that they had adopted a practice of putting a charge of coke breeze on the top of each wagon of Durham coal before it went to the bunker. He could not say that it actually influenced the travel of the coal in the retort, but it did dispose of the coke breeze. It did not come out as breeze, but appeared to be re-coked.

Mr. **J. C. Hogg** (Stretford) said that unfortunately Durham coal had received a bad label. The term was applied to a very wide range of coals, but there could be no doubt that the type which was being delivered was far below the quality that the coalfield was actually able to produce. The Industry could deal with a consistently higher ash coal and it could deal with a consistently small-sized coal; but when qualities ranged from 6 to 15% ash and from singles to slurry in the same consignment, "trouble" was very much emphasized.

Mr. **A. E. Ormrod** (Oldham) said he had been informed by a representative of one of the contractors that all the internal retort trouble with Durham coal could be eliminated by means of six months' stocking.

In reply to an enquiry as to whether when using Durham coal, the heats began to drop, Mr. **Greenwood** said that they were maintained quite easily, and with little difference in the settings of the dampers either for producer gas, waste gas, or secondary air. There was no difference to the way in which the Lancashire and Yorkshire coals were carbonized.

Mr. **D. Benson** (Bolton) said that prior to the war a test had been made on screened Durham coal, when no difficulty had been experienced in obtaining normal throughputs or in maintaining the heats. The producers, however, worked on normal Yorkshire and Lancashire cokes. Since the war they had worked on mixed cokes and had had to open up in order to maintain the heats, but this had been probably due to the producers not functioning as they should do. He did not think it had anything to do with the nature of the coal in the retorts until it got, of course, to the producers as coke.

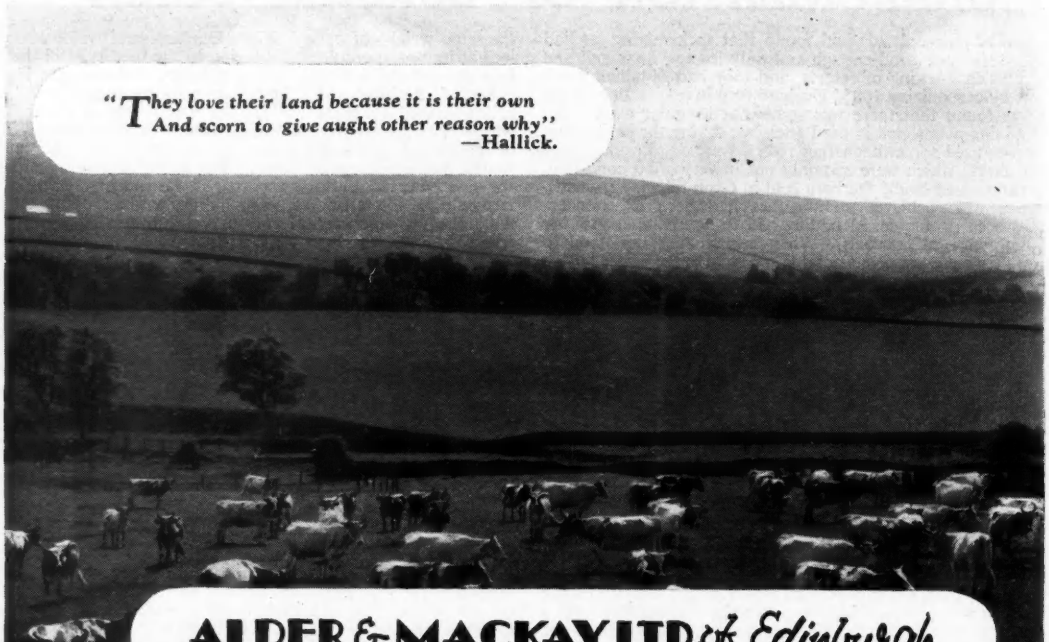
With regard to stocking, at Bolton they did put down a dump which consisted chiefly of Durham coal. After about six months they had to pick it up again and put it in the retorts. There did not appear to be any difference in carbonization.

Mr. **J. Albinson** asked whether Mr. Greenwood had observed a deposition of scurf in a retort in which Durham coal was carbonized.

Mr. **Greenwood** said there appeared to be no difference in scurf formation. It should be borne in mind, however, that his undertaking was carbonizing a mixture which contained, at the most, only 50% of Durham coal.

Mr. **C. A. B. Woodhead** (Birkenhead) said they could only get their Durham coal results by extrapolation. They were using 35%. By extrapolation he estimated that the ordinary coal throughput in the 63 in. W.D. retorts was about 6 tons and with Durham coal about 5 tons. With the Durham coal by extrapolation the yield was about 9% of total output, down. The only trouble experienced usually occurred when starting up the retort. With careful attention to the extraction at the bottom in the first 24 hours, everything seemed to go

* Discussion on H. Greenwood's Manchester Junior Paper, "GAS JOURNAL," Aug. 26, p. 318.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quite well. The rodding seemed to be much easier than with ordinary coal, the rod practically sinking down the coal by its own weight, but it should be done a little more frequently. The scurf seemed to be much heavier, no doubt on account of the steam.

Mr. A. **K. Collinge** (Preston) said he had visited Newcastle, and by the courtesy of Mr. Crowther was able to investigate their carbonizing conditions on a basis of 100% Durham coal. Briefly, the opinion was that no retort with a minor axis above 10 in. should be expected to carbonize Durham coal; it was regarded as almost an impossibility. Years ago they had pitching troubles, but they were overcome by the provision of a complete tar circulation through the hydraulic and collecting mains. Sticking in the retorts was practically unknown, and the coal used was just about the same quality as that used in the Lancashire area recently. There were ample data available as to the use of Durham coal in various types of retorts both horizontal and vertical, and also any modifications which should be made in the design or operation. If engineers had availed themselves of this information a considerable amount of anxiety would have been avoided.

THE TWO-PART TARIFF

Discussion on Paper by A. F. Pollock to the North British Association of Gas Managers, Sept. 4—see "Journal" of Sept. 2 and Sept 9.

Mr. **Pollock,** introducing his Paper, said that it would come as a great relief if, in the glad new era after the war, the Government of the day were to sanction a compulsory minimum charge. Pre-war Governments admitted—unofficially—that a minimum charge for gas was no less justifiable than for electricity, taxis, and telephones, but they feared the reaction of the electorate. He wondered if that fear was well grounded. If Edinburgh was typical of the rest of the country, some 55% of the gas-consuming electors would have stood to benefit immediately under a properly graduated minimum charge, with a low commodity price; and a well-stated case, properly presented, could have convinced a considerable proportion of the remaining 45% that the new charges brought within their reach a measure of convenience and comfort which they had never previously enjoyed. Surely, even if the public bothered to make a political issue of it at all, the Government would have found enough new support to counterbalance the votes of the malcontents. The Gas Industry had a strong case for a minimum charge if only on grounds of the greatest good for the greatest number. It should carry the day when the war is over, but, if it failed, it had much to gain and little to lose from a bold experiment with the optional two-part tariff.

Mr. **D. Fulton,** Helensburgh, said the test of any scheme of sales promotion charges was the measure of success attending its adoption, but he took it that in this case the scheme was not launched. A considerable number of schemes differing in detail were now operating, and from this it was clear that the test of experience had not yet succeeded in evolving a common base for tariff charges. The comparatively low flat rate charge for gas had been a very great obstacle in the way of adopting tariff charges, and because of the statutory limitation on the imposition of a minimum charge all schemes must necessarily be in the form of compromises.

The block system was simple and straightforward and no one could elect to remain outside if it he used gas at all. For that reason it had obtained more favour than the two-part tariff system, which required sales effort. The Author was guarded in expressing opinion, but it seemed a fair deduction, and he was probably right, that the two-part tariff was the more effective sales agent. No scheme could be absolutely equitable. The Author's balancing of losses and benefits was however a fair and plausible compromise. The system brought out a very small annual service charge, a factor which gave promise of success.

There was no good alternative to the adoption of the number of rooms as a basis for fixing the service charge. All alternatives were much too complicated and less straightforward in their incidence. The method adopted for fixing the service charge was ingenious and seemed fair to all concerned. It was obviously a great advantage in adopting an optional tariff scheme that the greatest number of consumers possible should be brought into its scope from the very beginning.

Regarding the calculation of the "mode" for the different sizes of houses, there was about it some suggestion of departing from the mathematical to the empirical. The principle of grouping in pairs, three's, and so on could hardly be other than somewhat arbitrary. The Paper brought out very clearly how impossible it was to introduce any system of promotional charges in haphazard fashion. The method outlined had the advantage of not causing undue strain on the resources in persons and machines of the majority of the undertakings. Failure to recognize that careful statistical preparation was necessary had caused the inauguration of some rather ill-digested schemes.

The figures given showed that in Edinburgh there was ample opportunity for the introduction of a two-part tariff. The present figures of sale per customer were low compared with a residential district such as Helensburgh. In Edinburgh the ordinary meters averaged 22,760 cu.ft. per consumer; the slot meters 19,677 cu.ft.; the average for the three-roomed house was 17,287 cu.ft. In Helensburgh the figures for the ordinary meter were 64,000 cu.ft., for the slot meter 34,000–35,000 cu.ft. Obviously the result of the adoption of a two-part tariff would be much more successful in Edinburgh than in Helensburgh. For some time, said Mr. Fulton, his opinion was firmly in favour of the two-part tariff as against the block system, but lately his leanings had been towards the latter, partly because of its simplicity and the ease with which a standard quantity could be fixed for every house, thereby providing an opportunity of increased consumption in every size of house from the smallest to the largest.

Mr. **W. C. Campbell,** Galashiels, said the Paper showed clearly that tariff structure required statistical knowledge and scientific application, and banished the idea that tariff application to gas charges was simply a matter of deciding upon some convenient-looking figures such as would encourage the use of cheap gas and then offering these rates to the public. Any optional tariff designed to encourage increased use of gas must immediately benefit those consumers who previously consumed more than a datum figure, and the introduction of the tariff would immediately bring about a loss of revenue from such consumers.

Appreciating the potential value of promotional tariffs, they in Galashiels carried out in 1939 an exhaustive investigation into the sales records of all their customers. The work was considerable and, even in a comparatively small undertaking like Galashiels, it was no mean task. From the mass of information produced, statistics were prepared on lines similar to those set out in the Paper, and the resultant figures were not unlike those resulting from the Edinburgh investigation. With the information before him he faced the task of designing a promotional tariff which would attain its main purpose without seriously endangering the existing revenues (from what was then moderately low price gas). He had found it simply could not be done. Obviously the time to introduce promotional tariffs in place of flat rates was not in 1939, when rising costs of raw materials required for gas production were not favourable to reductions in the price of gas.

The undernoted analyses had been prepared: (1) Analysis of consumption in blocks of 10,000 cu.ft. (2) Analysis of consumption in various sizes of house. (3) Charts of consumption over ten years, by various classes of consumers. (4) Record of gas consumers using electricity for various purposes. (5) Losses of consumption due to introduction of electricity over a period of two years. (6) On basis of Report by Committee on Gas Charges (*a*) service and commodity costs for financial year 1938–39; (*b*) net cost of production, distribution, &c.

In Galashiels the commodity cost worked out at 2s. 0.88d. per 1,000 cu.ft. and the service cost at 20s. 1d. per domestic consumer. The general application of such a tariff would have been impractical and he had come to the conclusion that an admirable system, for Galashiels at least, would have been a cross between the two-part tariff and the block system based on a high-rated initial block and low-rated subsequent block, the size of the initial block to vary with the size of the house.

Mr. **J. M. Dow,** Kirkcaldy, said that to Helensburgh the two-part tariff presented no great attraction because the basic rate there was low, but in Kirkcaldy, where they had heavy and substantial charges which had affected the price of gas, a two-part tariff would be helpful.

Mr. **T. S. Lockhart,** Rothesay, said that in Rothesay they made an emergency service charge of 10s. per annum for each consumer.

Mr. **D. D. Burns,** Glasgow, said it amazed him to see the variety of tariffs in the Gas Industry. Surely two or three would suffice.

Mr. **R. D. Keillor.** the President, said they should read between the lines of the Paper and apply the moral of it to their own circumstances.

Mr. **Pollock,** replying, said the two-part tariff was not in operation in Edinburgh. He believed a fair degree of uniformity could be obtained in spite of differences in areas. He was strongly in favour of a two-part tariff. It was fairer to the consumer, and was a powerful weapon in the hand of the salesman trying to sell additional apparatus. It was not an opportune time to introduce it, but consideration of it was timely. They had to be ready, when the war ended, to introduce a tariff that would encourage their Industry. A sub-committee of the Post-War Planning Committee had this subject under consideration.

Messrs. H. Mitchell & Co. advise us that, owing to the expiration of the lease of their present premises, all communications should, after Sept. 29, be addressed to 36 and 38, New Charles Street, London, E.C. 1, telephone Clerkenwell 3700.

Cookery Demonstrations arranged by the North Middlesex Gas Company were given recently at a Food Production Show held in the Company's area. The demonstrator was Mrs. A. D. Stanley, of the Gas Light and Coke Company, and the average attendance throughout the five days of the show was 130.

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Gas Products Prices

The London Market Sept. 21.

The only change in the prices of Coal Tar Products in the London Market refers to 95/160 Solvent Naphtha, which is now about 2s. 3d. to 2s. 7d. per gallon.

The Provinces Sept. 21.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 1s. to 1s. 4d. according to quality. Solvent naphtha, naked, North, 2s. 2d. to 2s. 6d. Heavy naphtha, North, 1s. 10d. to 1s. 11d. Carbolic acid, 60's, controlled by the Coal Tar Acids Prices (Inland) Order, 1942, operative from May 1. Naphthalene, controlled by the Naphthalene prices (Inland) Order, 1942, dated April 15, 1942, and operative from May 1, 1942, £19 to £19 10s.—bags free. Anthracene, controlled by the Anthracene Prices (Inland) Order, 1942, operative from May 1. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5½d; timber preservation and other purposes 4¾d. to 6d. These prices apply as from May 13.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland Sept. 19.

A steady throughput is maintained. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¾d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6¾d. to 7d. per gallon; all *ex* Works in bulk. Cresylic acid continues active at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha 6½d. to 7d. Solvent naphtha 90/160g rade, 2s. to 2s. 3d. and 90/190 Heavy naphtha, 1s. 9d. to 2s. per gallon. Pyridine: 90/160 grade, 13s. and 90/140 grade, 15s. per gallon.

Gas Stocks and Shares

Quiet conditions ruled in the stock markets last week although the tone generally was steady. Except for a few features among industrials price changes were small and irregular. The volume of business in the Gas Market was also on a smaller scale, and it will be seen that very few quotations altered during the week. Apart from Gas Light units in which by reason of the large issue a fair number of transactions are usually recorded, the Croydon stocks received good support and parcels of Imperial Continental Ordinary were changing hands at about 66½. Tottenham Ordinary appears on the low side and if obtainable at 92 or better may well turn out a profitable holding.

The following price changes took place during the week:

OFFICIAL LIST

Commercial Ord.	35—40	+1	
Gas Light 3 p.c. Deb....	77—82	−2	
Ditto 3¾ p.c. Red. Deb. (x.d.) ...	92—95	Sept. 14	
Portsmouth Cons.	96—101	+1	
Tottenham Ord.	88—93	+2	
United Kingdom Gas Corporation 3½ p.c. Red. Deb. (x.d.)... ...	90—95	Sept. 14	

SUPPLEMENTARY LIST

Plymouth & Stonehouse 5 p.c. Deb. (x.d.)	103—108	Sept. 14

PROVINCIAL EXCHANGE

Bristol Ord.	107—109	−1

TRADE CARDS

FULL particulars of these spaces can be obtained on application to the Publishers. They are designed principally for the use of the firms whose display advertisements cannot be included owing to paper rationing.

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Gas Flow Recorders and Indicators
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WALKER, CROSWELLER & CO. LTD.
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Darlington. T/N Darlington 2734. T/A Whessoe, Darlington, and Potten End, Berkhamsted. T/N Berkhamsted 330. T/A Whessoe, Berkhamsted.

Cylindrical, Spherical, Spiral and Column Guided Gasholders. Electro-Detarrers, Washers, Purifiers, Condensers.

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A **GAS UNDERTAKING in the Southern half of** England invites Tenders for the Supply and Erection of a One Million Cubic Feet capacity **Gasholder** in Steel Tank. Recognized Contractors who are able to undertake the work and wish to tender should communicate with No. 9234 "GAS JOURNAL," 51, High Street, Esher, not later than October 3, 1942, to obtain further particulars. September 11, 1942.

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JUNIOR CHEMICAL ENGINEER required by the Ashton Gas Company. Must have had workshop and drawing office experience in an engineering works, and be able to carry out the usual laboratory tests required on a modern Gas-works. Salary £200-250 per annum. Apply W. Bennett, General Manager, Ashton Gas Company, Ashton-under-Lyne.

(Classified Advertisements continued on p. 478.)

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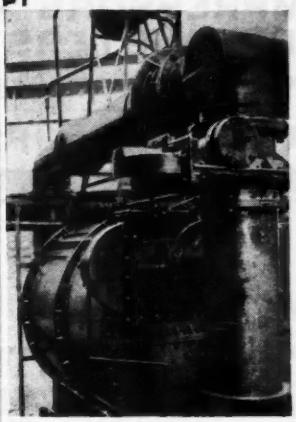
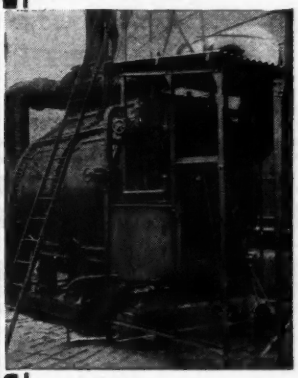


"Permac" Joints in a Gas Works.



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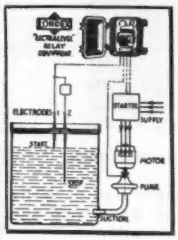

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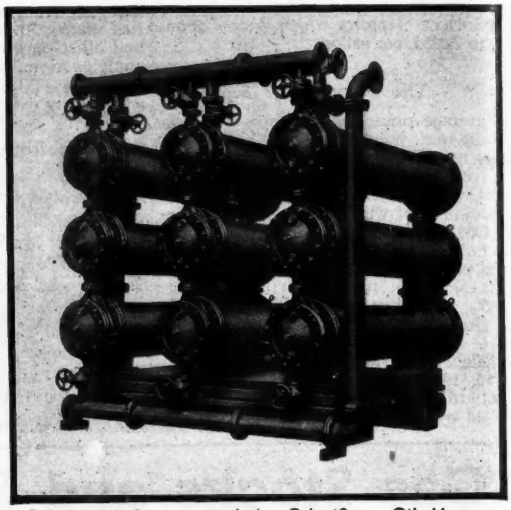

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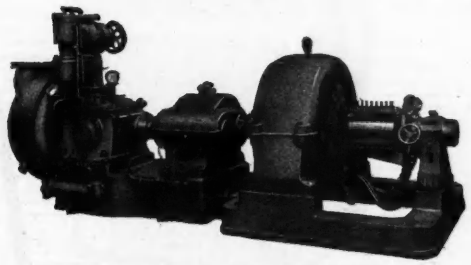

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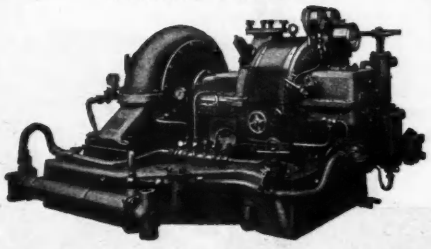

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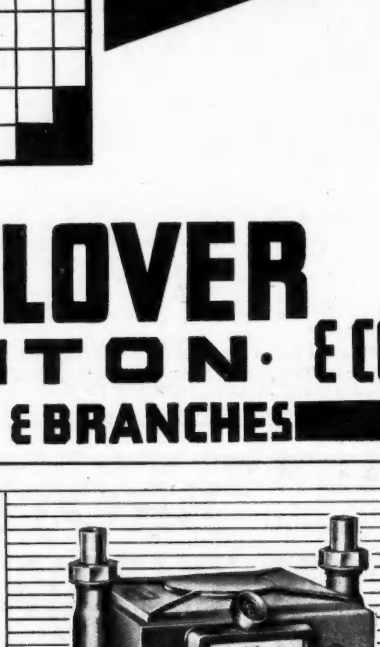

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